

What is claimed is:

1. A semiconductor device comprising:

a substrate;

a pixel thin film transistor provided over said substrate;

a bus line provided over said substrate and connected with said pixel thin film transistor; and

a pattern comprising a same material as said bus line and provided in a same layer as said bus line,

wherein said pattern is provided adjacent to a side edge of said substrate, and

wherein said bus line is apart from said pattern and said side edge of said substrate.

2. A semiconductor device comprising:

a substrate;

a pixel thin film transistor provided over said substrate;

a bus line provided over said substrate and connected with said pixel thin film transistor;

a pattern comprising a same material as said bus line and provided in a same layer as said bus line; and

a sealant material provided over said substrate and provided over a region located between said bus line and said pattern,

wherein said pattern is provided ^{close to or nearly} (adjacent to) a side edge of said substrate, and

wherein said bus line is apart from said pattern and said side edge of said substrate.

3. A semiconductor device comprising:

a TFT substrate;

a pixel thin film transistor provided over said TFT substrate;

a bus line provided over said TFT substrate and connected with said pixel thin film transistor;

a pattern comprising a same material as said bus line and provided in a same layer as said bus line; and

a counter substrate opposed to said TFT substrate, wherein said pattern is provided adjacent to a side edge of said TFT substrate,

wherein said bus line is apart from said pattern and said side edge of said TFT substrate, and

wherein said side edge of said TFT substrate is aligned with a side edge of said counter substrate.

4. A device according to claim 1 further comprising:
a driver thin film transistor provided over said
substrate and forming a driver circuit for driving said
pixel thin film transistor; and

a control circuit for controlling said driver circuit,
wherein said control circuit is disposed at a control
circuit accommodation portion of said substrate, said
control circuit accommodation portion being thinner than
other portions of said substrate.

5. A device according to claim 4 wherein said
control circuit is packed over said substrate by chip-on-
glass technology.

6. A device according to claim 1 wherein said
pattern has a shape of at least a part of a short ring.

7. A device according to claim 1 wherein said
semiconductor device is an active matrix liquid crystal
display.

8. A device according to claim 1 further comprising:

a driver thin film transistor provided over said substrate and forming a driver circuit for driving said pixel thin film transistor; and

a control circuit for controlling said driver circuit, wherein said control circuit is provided over said substrate and adjacent to an opposite side edge of said substrate to said pattern.

9. A device according to claim 1 further comprising a sealant material provided over said bus line.

10. A device according to claim 2 further comprising:
a driver thin film transistor provided over said substrate and forming a driver circuit for driving said pixel thin film transistor; and

a control circuit for controlling said driver circuit, wherein said control circuit is provided in said sealant material.

11. A device according to claim 2 further comprising:
a driver thin film transistor provided over said substrate and forming a driver circuit for driving said pixel thin film transistor; and

a control circuit for controlling said driver circuit,

wherein said control circuit is disposed at a control circuit accommodation portion of said substrate, said control circuit accommodation portion being thinner than other portions of said substrate.

12. A device according to claim 11 wherein said control circuit is packed over said substrate by chip-on-glass technology.

13. A device according to claim 2 wherein said pattern has a shape of at least a part of a short ring.

14. A device according to claim 2 wherein said semiconductor device is an active matrix liquid crystal display.

15. A device according to claim 2 further comprising:
a driver thin film transistor provided over said substrate and forming a driver circuit for driving said pixel thin film transistor; and

a control circuit for controlling said driver circuit,
wherein said control circuit is provided over said substrate and adjacent to an opposite side edge of said substrate to said pattern.

16. A device according to claim 3 further comprising:
a driver thin film transistor provided over said TFT
substrate and forming a driver circuit for driving said
pixel thin film transistor; and

a control circuit for controlling said driver circuit,
wherein said control circuit is disposed at a control
circuit accommodation portion of said TFT substrate, said
control circuit accommodation portion being thinner than
other portions of said TFT substrate.

17. A device according to claim 16 wherein said
control circuit is packed over said TFT substrate by chip-
on-glass technology.

18. A device according to claim 3 wherein said
pattern has a shape of at least a part of a short ring.

19. A device according to claim 3 wherein said
semiconductor device is an active matrix liquid crystal
display.

20. A device according to claim 3 further comprising:

a driver thin film transistor provided over said TFT substrate and forming a driver circuit for driving said pixel thin film transistor; and

a control circuit for controlling said driver circuit, wherein said control circuit is provided over said TFT substrate and adjacent to an opposite side edge of said TFT substrate to said pattern.

21. A device according to claim 3 further comprising a sealant material provided between said TFT substrate and said counter substrate.

22. A method for forming a semiconductor device comprising:

forming a pixel thin film transistor and a bus line over a substrate, said bus line being connected with said pixel thin film transistor, said bus line being connected with a short ring provided over said substrate adjacent to a side edge of said substrate; and

cutting said bus line from said short ring without cutting said substrate to leave behind a pattern over said substrate, said pattern being same as at least a part of said short ring while said pattern is free from a shorting function,

wherein the bus line cut from said short ring is apart from said pattern and said side edge of said substrate.

~~23.~~ A method for forming a semiconductor device comprising:

forming a pixel thin film transistor and a bus line over a substrate, said bus line being connected with said pixel thin film transistor, said bus line being connected with a short ring provided over said substrate adjacent to a side edge of said substrate;

cutting said bus line from said short ring without cutting said substrate to leave behind a pattern over said substrate, said pattern being same as at least a part of said short ring while said pattern is free from a shorting function; and

forming a sealant material over said substrate after said cutting step,

wherein the bus line cut from said short ring is apart from said pattern and said side edge of said substrate.

~~24.~~ A method for forming a semiconductor device comprising:

forming a pixel thin film transistor and a bus line over a TFT substrate, said bus line being connected with

said pixel thin film transistor, said bus line being connected with a short ring provided over said TFT substrate adjacent to a side edge of said TFT substrate;

cutting said bus line from said short ring without cutting said TFT substrate to leave behind a pattern over said TFT substrate, said pattern being same as at least a part of said short ring while said pattern is free from a shorting function;

bonding said TFT substrate and a counter substrate together; and

cutting said TFT substrate and said counter substrate along a common plane,

wherein the bus line cut from said short ring is apart from said pattern and said side edge of said TFT substrate.

25. A method according to claim 22 further comprising:

packing a control circuit over said substrate for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said substrate for driving said pixel thin film transistor; and

sealing said control circuit in a sealant material that seals a liquid crystal material, said sealant material being positioned over said substrate.

26. A method according to claim 22 further comprising:

thinning a control circuit accommodation portion of said substrate to install therein a control circuit for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said substrate for driving said pixel thin film transistor.

27. A method according to claim 25 wherein said control circuit is packed over said substrate by chip-on-glass technology.

28. A method according to claim 22 wherein said cutting is a laser cutting.

29. A method according to claim 22 wherein said pattern has a shape of at least a part of said short ring.

30. A method according to claim 22 wherein said semiconductor device is an active matrix liquid crystal display.

31. A method according to claim 23 further comprising:

packing a control circuit over said substrate for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said substrate for driving said pixel thin film transistor; and

sealing said control circuit in said sealant material.

32. A method according to claim 23 further comprising:

thinning a control circuit accommodation portion of said substrate to install therein a control circuit for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said substrate for driving said pixel thin film transistor.

33. A method according to claim 32 wherein said control circuit is packed over said substrate by chip-on-glass technology.

34. A method according to claim 23 wherein said cutting is a laser cutting.

35. A method according to claim 23 wherein said pattern has a shape of at least a part of said short ring.

36. A method according to claim 23 wherein said semiconductor device is an active matrix liquid crystal display.

37. A method according to claim 24 further comprising:

packing a control circuit over said TFT substrate for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said TFT substrate for driving said pixel thin film transistor; and

sealing said control circuit in a sealant material that seals a liquid crystal material, said sealant material

being positioned between said TFT substrate and said counter substrate.

38. A method according to claim 24 further comprising:

thinning a control circuit accommodation portion of said TFT substrate to install therein a control circuit for controlling a driver circuit made up of a driver thin film transistor, said driver thin film transistor being formed over said TFT substrate for driving said pixel thin film transistor.

39. A method according to claim 38 wherein said control circuit is packed over said TFT substrate by chip-on-glass technology.

40. A method according to claim 24 wherein said cutting is a laser cutting.

41. A method according to claim 24 wherein said pattern has a shape of at least a part of said short ring.

42. A method according to claim 24 wherein said semiconductor device is an active matrix liquid crystal display.

43. A method according to claim 24 further comprising:

thinning a portion of said counter substrate located opposite to a control circuit accommodation portion of said TFT substrate, in order to install a control circuit for controlling a driver circuit in said control circuit accommodation portion of said TFT substrate, said driver circuit being made up of a driver thin film transistor for controlling said pixel thin film transistor.

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